Evaluation Report Covering Rooms and Bedrooms

FINAL REPORT

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U S C E N S U S B U R E A U
Helping You Make Informed Decisions

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EXECUTIVE SUMMARY

Test Objective

- In January through March of 2006, the American Community Survey (ACS) conducted the first test of new and modified content since the ACS reached full implementation levels of data collection. The results of that testing will determine the content for the 2008 ACS.

- The objectives of the alternative questions on number of rooms and bedrooms were to provide a definition of a "separate room" and improve the respondent's understanding that rooms and bedrooms are related; that is, the total number of bedrooms is a subset of total rooms, especially in the case of an efficiency apartment which has only one room and no bedroom. The analyses of the results from the Census 2000 and the American Community Survey mail questionnaires suggest that there were inconsistencies between the count of rooms and bedrooms. The Census 2000 Reinterview Survey indicated that the index of inconsistency for bedrooms was high (57.1).

Methodology

- The Content Test compared two versions of the rooms and bedrooms question set. The control version replicated the current ACS question.

- The test version included the following changes to the question on total number of rooms:
  - Adding the word "separate" to the question stem.
  - Adding the instruction that defines a "room."
  - Adding an instruction to include bedrooms and kitchens in the count of rooms.
  - Modifying the exclusionary instruction by removing the "half-room" concept.
  - Using an open-ended/write-in field rather than categories.

  The test version included the following changes to the question on number of bedrooms:
  - Adding language that explicitly links the total count of rooms and the count of bedrooms.
  - Provide the heuristic/rule to use for defining a bedroom as part of the instruction.
  - Providing instructions for efficiency/studio apartments.
  - Using an open-ended/write-in field rather than categories.

Research Questions/Results

- Research Questions 1 and 2: Will the changes to the room question improve the *accuracy* of the question? Will the changes to the bedrooms question improve the *accuracy* of the question?

  The results support the hypothesis that the net difference rate for the test panel was equal to or better than the net difference rate for the control panel for rooms and bedrooms.

- Research Questions 3: Will the changes to the question and response field improve the under-reporting of total rooms?

  The test panel resulted in a larger median number of rooms at the national level (5.7 for the test panel vs. 5.3 for the control) and within the high (5.9 vs. 5.5) and low (5.0 vs. 4.6) response areas. Therefore, the test version reduced the under-reporting of rooms.

- Research Questions 4 and 5: Will the changes to the question and the response field impact the item nonresponse rate for the total rooms question? Will the changes to the question and the response field impact the item nonresponse rate for the bedrooms question?

  Although there was no evidence to suggest that the test version of the room/bedroom questions improved response, the results did support the hypotheses that the response rates for the test version were similar to those using the control version. The only exception was in the low response area where a higher percentage of respondents did not answer the test version question on bedrooms.

- Research Question 6: Will the changes to the question and response field change the distribution of bedrooms?

  The results support the hypothesis that the reporting of "0" bedrooms was higher in the test panel than the control panel and illustrate the shifting of "1-bedroom units" to "0-bedroom" units, and "2-room" to "1-room" units.

- Research Question 7: Will the combination of changes to both the rooms and bedrooms question improve the internal consistency of responses to the two questions?

  The results support the hypothesis that there was more inconsistency in the reporting of rooms and bedrooms in the control panel than in the test panel at the national level (3.8 percent vs. 6.7 percent on the control) and within high and low response areas.

Summary of Empirical Results

Changes to the questions reduced underreporting of rooms, increased reporting of "0" bedrooms, and improved consistency between rooms and bedrooms while maintaining the item response rate. The net difference rate was also maintained or improved in the test panel. Systematic response error was equal or less for the test version.

The systematic response error was larger for some room categories in the test version.

Empirically, the test version performed better than the control version.

1. BACKGROUND

1.1. Motivation for the 2006 ACS Content Test

In January through March of 2006, the American Community Survey (ACS) conducted the first test of new and modified content since the ACS reached full implementation levels of data collection. The results of that testing will determine the content for the 2008 ACS. The year 2008 marks the first year of a three-year aggregated data product that includes data from the same year as the 2010 decennial census (2008 - 2010). Similarly, 2008 is the midpoint year for the first five-year data product that includes data from 2010 (2006-2010). Given the significance of the year 2008, the ACS committed to a research program during 2006 that will result in final content determination in time for the 2008 ACS. This research is the 2006 ACS Content Test.

Through the Office of Management and Budget (OMB) Interagency Committee on the ACS, the Census Bureau included subject matter experts and key data users from other federal agencies in identifying questions for inclusion in the Content Test. In general the Content Test evaluated alternatives for questions which showed some indication of a problem, for example, high missing data rates, estimates which differed systematically from other sources of the same information, or high simple response variance as measured in the Census 2000 Content Reinterview survey. In addition, the Content Test also included testing of three new topics proposed by other federal agencies for inclusion in the ACS.

To meet the primary objective of the 2006 ACS Content Test, analysts evaluated changes to question wording, response categories, instructions, or examples relative to the current version of the questions. Additionally, the Content Test design reflected two secondary objectives. One of the secondary objectives addressed form design alternatives for the basic demographic section of the form. The second addressed the content of the questionnaire mailing package. Results indicated no interaction between either of the two secondary objectives and the first objective addressing changes made to questions. Thus, this report will only address testing specific to the first objective - testing of alternative questions, response categories, etc.. Specifically, this report discusses rooms and bedrooms.

1.2. Previous Testing or Analysis for Rooms and Bedrooms

Every census since 1940 has collected data on the number of rooms in a housing unit. In combination with information about the number of persons residing in the unit, this item allows for living space estimates and for calculations of the number of persons per room in a particular dwelling. Such data is useful to housing policy makers and planners, and is required or mandated by federal legislation concerning community development block grants, housing voucher allocations, and other housing grant programs.

The 2000 question was similar to the corresponding question in the prior three censuses. It added “mobile home” to the “house or apartment” wording of the 1980 and 1990 censuses, which had differed from the “living quarters” wording of the 1970 item.

Every census since 1960 has included an item on the number of bedrooms in a housing unit. In combination with other data such as number of persons per household, rooms and bedrooms offer a means of assessing housing adequacy and crowding. Legislation concerning low-income housing tax credits and housing vouchers require information on number of bedrooms per housing unit.

Every census since 1960 has inquired about the number of bedrooms. The 1960, 1970, and 1980 questions asked respondents to count "rooms used mainly for sleeping even if used for other purposes." The 1990 question used a different definition, asking respondents, "How many bedrooms would you list if this house or apartment ("or mobile home," added in 2000) were on the market for sale or rent?" Answer options ranged from "no bedroom" to 5 or more.

According to results from the Census 2000 Reinterview Survey, the index of inconsistency is high for this question (57.1). Some attribute this effect to the fact that people may be doing one of two things:

1. Checking both "1 room" in question 7 and "1 bedroom" in question 8 for an efficiency apartment, or

2. Checking the number of rooms (excluding the count of the number of bedrooms) in question 7 and then providing the number of bedrooms in question 8.

The current CAPI bedroom question asks respondents to indicate : "How many of these rooms are used as bedrooms?" This is similar to the approach tested in Panel 1. An instruction to include bedrooms in the rooms question could minimize a respondent's confusion. Bedrooms should be a subset of rooms.

Westat conducted 44 cognitive interviews early in 2005 with individuals from the Washington, DC and Baltimore, MD areas utilizing both mail (self-administered) and telephone (interviewer administered) survey modes. Participants varied in different types of ownership. For these items, there were two versions – one was the current ACS question (our control panel) and one similar to our test panel.

The recommendation from Westat is as follows: Providing respondents with more information as to how to count the rooms in their homes should increase the accuracy of reporting. Consider adding an instruction such as one of the following:

Count only finished rooms separated by a wall.

Rooms must be separated by archways or walls that extend out at least 6 inches.

The findings further suggest no advantage for the use of closed-ended categories, and perhaps a slight advantage for linking the items on rooms and bedrooms together. Thus, we recommend the use of the proposed version 1. In future work, you might also explore the

possibility of first asking respondents to report the number of bedrooms, and then the number of *other* rooms in their home. This approach would avoid the redundancy that currently exists in the two items, in that bedrooms are to be counted for both. Survey respondents generally expect researchers do not want redundant information to be reported – thus the redundancy may be contributing to the problems with the data for these items.

In the telephone mode, consider revising the item asked of apartment dwellers to:

Is this an efficiency or studio apartment?

(See Appendix B for the full report)

2. RESEARCH QUESTIONS AND SELECTION CRITERIA

The Content Test compared two versions of the rooms and bedrooms question set. The control version replicated the current ACS question.

The test version for the mail questionnaire included the following changes to the question on total number of rooms:

- Adding the word "separate" to the question stem.
- Adding the instruction that defines a "room."
- Adding an instruction to include bedrooms and kitchens in the count of rooms.
- Modifying the exclusionary instruction by removing the "half-room" concept.
- Using an open-ended/write-in field rather than categories.

The test version for the mail questionnaire included the following changes to the question on number of bedrooms:

- Adding language that explicitly links the total count of rooms and the count of bedrooms.
- Provide the heuristic/rule to use for defining a bedroom as part of the instruction.
- Providing instructions for efficiency/studio apartments.
- Using an open-ended/write-in field rather than categories

There were some differences in the CAPI Control and Test instrument designs. See section 3.3, Methodology specific to the research questions on page 13.

2.1. Research Questions 1 and 2

Will the changes to the room question improve the *accuracy* of the question? Will the changes to the bedrooms question improve the *accuracy* of the question?

Net difference rate for the test panel is equal to or better than the net difference rate for the control panel

2.2. Research Question 3

Will the changes to the question and response field improve the under-reporting of total rooms?

The average number of total rooms reported in the test panel is equal to or higher than the average number of total rooms reported in the control.

2.3. Research Questions 4 and 5

Will the changes to the question and the response field impact the item nonresponse rate for the total rooms question? Will the changes to the question and the response field impact the item nonresponse rate for the bedrooms question?

Item non-response rates for the test panel are equal to or less than the item non-response rates for the control panel.

2.4. Research Question 6

Will the changes to the question and response field change the distribution of bedrooms?

The test panel has a higher count of 0 bedroom units than the control panel.

2.5. Research Question 7

Will the combination of changes to both the rooms and bedrooms question improve the internal consistency of responses to the two questions?

The internal consistency between the test versions of the rooms and bedrooms questions are equal to or better than the control version.

The selected version of the question will meet the following minimum criteria:

- The best internal consistency between the rooms and bedrooms question (statistically lower reports of number of bedrooms equal to or greater than the total number of rooms) and the highest average number of total rooms.

3. METHODOLOGY

3.1. Data Collection Methods

3.1.1. The 2006 ACS Content Test data collection

The 2006 ACS Content Test consisted of a national sample of approximately 62,900 residential addresses in the contiguous United States. (The sample universe did not include Puerto Rico, Alaska and Hawaii). To meet the primary test objective of evaluating question wording changes, approximately half of the sample addresses were assigned to a test group (31,450) and the other half to a control group (31,450). For the topics already covered in the ACS, the test group included the proposed alternative versions of the questions, and the control group included the current version of the questions as asked on the ACS. Both the test and control questionnaires included three new topics not currently on the ACS. Both test and control included the three new topics to keep context and questionnaire length consistent between the two versions.

The ACS Content Test used a similar data collection methodology as the current ACS, though cost and time constraints resulted in some deviations. Initially, the ACS collects data by mail from sampled households, following a mailing strategy geared at maximizing mail response (i.e., a pre-notice letter, an initial questionnaire packet, a reminder postcard, and a replacement questionnaire packet). The Content Test implemented the same methodology, mailing each piece on the same dates as the corresponding panel in the ACS. However, the Content Test did not provide a toll-free number on the printed questionnaires for respondents to call if they had questions, as the ACS does. The decision to exclude this service in the Content Test primarily reflects resource issues in developing the materials needed to train and implement the operation for a one-time test. However, excluding this telephone assistance allows us to collect data that reflects the respondent's interpretation and response without the aid of a trained Census Bureau interviewer.

The ACS follows-up with mail nonrespondents first by Computer Assisted Telephone Interviewing (CATI) if a phone number is available, or by Computer Assisted Personal-visit Interviewing (CAPI) if the unit cannot be reached by mail or phone. For cost purposes, the ACS subsamples the mail and telephone nonrespondents for CAPI interviewing. In comparison, the Content Test went directly to CAPI data collection for mail nonrespondents, dropping the CATI data collection phase in an effort to address competing time and resource constraints for the field data collection staff. While skipping the CATI phase changes the data collection methods as compared to the ACS, eliminating CATI allowed us to meet the field data collection constraints while also maintaining the entire mail nonrespondent universe for possible CAPI follow-up. Using CATI alone for follow-up would have excluded households for whom we do not have a phone number.

The ACS also implements an edit procedure on returned mail questionnaires, identifying units for follow-up who provided incomplete information on the form, or who reported more than five people living at the address. (The ACS questionnaire only has space to collect data

for five people.) This is called the Failed Edit Follow Up operation (FEFU). The ACS calls all households identified as part of the FEFU edit to collect the remaining information via a CATI operation. The Content Test excluded this follow-up operation in favor of a content reinterview, called the Content Follow-Up (CFU). The CFU also contacts households via CATI but the CFU serves as a method to measure response error, providing critical evaluative information. The CFU operation included all households who responded by mail or CAPI and for whom we had a phone number. More information about the CFU operation follows below.

The Content Test mailed questionnaires to sampled households around December 28, 2005, coinciding with the mailing for the ACS January 2006 panel. The Content Test used an English-only mail form but the automated instruments (both CAPI and CFU) included both English and Spanish translations. Beginning February 2006, a sample of households that did not respond by mail was visited by Census Bureau field representatives in attempt to collect the data. The CAPI operations ended March 2, 2006.

3.1.2. Content Follow-Up data collection

The CFU reinterview, conducted by the Census Bureau's three telephone centers, provided a method for measuring response error. About two weeks after receiving the returned questionnaire or completed CAPI interview, the responding unit entered the CFU operation. Telephone staff completed the CFU interviews between January 17 and March 17, 2006. At the first contact with a household, interviewers asked to speak with the original respondent. If that person was not available, interviewers scheduled a callback at a time when the household member was expected to be home. If at the second contact we could not reach the original respondent, interviewers completed the interview with another adult household member.

The CFU reinterview did not replicate the full ACS interview. Rather, the CFU used the roster and basic demographic information from the original interview and only asked questions specific to the analytical needs of the Content Test. Reinterview questions were of two general formats: the same question as asked in the original interview (in some cases, modified slightly for a CATI interview), or a different set of questions providing more detail than the question(s) asked in the original interview for the same topic. For topics in which the CFU asked the same question as the original interview, the CFU asked the test or control version of the question based on the original treatment. For these cases, the goal was to measure the reliability of the answers – how often we obtained the same answer in the CFU as we did in the original mail or CAPI data collection. For topics using a different question or set of questions than the original interview, we asked the same detailed series of questions regardless of the original treatment condition. Generally, these questions were more numerous than what we could ask in the ACS. In some cases the questions came from another existing survey, for example, for labor force, we asked the labor force questions from the Current Population Survey questions. In other cases the CFU asked additional probing questions based on prior testing results, such as for health insurance. For these topics, the goal was to measure how close the original answers were to the more detailed CFU answers.

3.2. Sample Design

The sample design for the ACS Content Test consisted of a multi-stage design, with the first stage following the Census 2000 Supplementary Survey (C2SS) design for the selection of Primary Selection Units (PSUs) defined as counties or groups of counties. The first stage selection of PSUs resulted in 413 PSUs or approximately 900 counties being selected.

Within sampled PSUs, households were stratified into high and low response strata based on tract-level mail response rates to the Census 2000 long form and a stratified systematic sample of households was selected. The strata were defined such that the high response stratum contained 75 percent of the housing units that reside in tracts with the highest mail response rate. The balance of the tracts was assigned to the low response stratum. To achieve similar expected number of mail returns for the high and low response strata, 55 percent of the sample was allocated to the low response strata and 45 percent to the high response strata.

A two-stage sampling technique was used to help contain field costs for CAPI data collection. The initial sample of PSUs was sorted by percentage of foreign-born population since the majority of that target population responds via CAPI. At least one item undergoing testing in the content test required an adequate sample of this population. The 20 PSUs with the highest percentage of foreign-born population were included with certainty and the remaining PSUs were sampled at a rate of 1 in 3. For the second stage, mail nonresponding households were sampled at a rate of 1 in 2 within the top 20 PSUs and at a sampling rate of 2 in 3 within the remaining PSUs. The final design designated 151 PSUs be included in the CAPI workload.

In the majority of PSUs, we assigned cases to both the control and test groups. To maintain field data collection costs and efficiencies, PSUs with an expected CAPI workload of less than 10 sampled addresses had all of their work assigned to only one treatment (either control or test). The PSUs were allocated to the two groups such that the aggregated PSU characteristics between the two groups are similar for employment, foreign born, high school graduates, disabled, poverty status, tenure, and Hispanic origin. For more information on the 2006 ACS Content Test sample design, see Asiala (2006).

There was no sampling for CFU. A CFU interview was attempted for all responding households to the Content Test for which we had a phone number.

3.3. Methodology Specific to the Research Questions.

The CFU approach for this topic was different than a straight "re-ask" of the rooms/bedrooms questions. Our objective was to gain a "better" measure of the rooms and bedrooms count. We asked a series of questions about the functional use specific of rooms similar to the method followed in the American Housing Survey. This approach allowed us to filter out bathrooms and other areas within housing units that should not be included in the count of rooms.

The differences in wording between the mail questionnaires and the CAPI instruments on total number of rooms and bedrooms questions were:

- In the CAPI test instrument, there was a question that screened for efficiency apartments. Efficiency apartments are one room/no bedroom apartments. If the unit was an efficiency, no further probes on the number of rooms or bedrooms were posed. On the mail test version, there was an instruction for the bedroom question indicating "*If this is an efficiency/studio apartment, print "0".*"
- The CAPI test instrument had a slightly different wording for the bedrooms question than the mail test panel. The CAPI wording was "Did you include bedrooms?" while the mail test questionnaire asked "How many of these rooms are bedrooms?"
- The wording of the question on the CAPI Control instrument was identical to the wording of the question on the mail questionnaire used in the test panel. The CAPI wording for the control was "How many of these rooms are bedrooms?" while the mail control questionnaire asked "How many bedrooms are in this house, apartment, or mobile home; that is, how many bedrooms would you list if this house, apartment, or mobile home were on the market for sale or rent?"

4. LIMITATIONS

4.1. General Content Test and Content Follow Up Limitations

As noted in section 2.1, Data Collection Methods, the Content Test maintained the same general mail data collection methodology as the ACS, but differed in the mail nonresponse follow-up operations. In general the deviations did not impact the validity of the results and, in many cases, increased the effectiveness of the testing. However, some aspects of the Content Test implementation should be considered in evaluating the data.

- As noted, the Content Test did not include CATI data collection in order to meet field data collection constraints. While the design of the Content Test allowed all sampled housing units an opportunity to participate even without CATI, questions administered differently over the phone did not get the benefit of a full CATI operation (though some of the CAPI interviews actually do occur by phone). However, since only ten percent of ACS data is collected by CATI and CATI interviewers are trained to help respondents understand question intent and response categories, overall ACS data quality should not suffer when questions are implemented using CATI.

- Though the test design required that field interviewers work only control or only test cases, interviewers in both conditions worked regular ACS production interviews at the same time they completed the Content Test cases. By design, the control instrument very closely replicated the ACS production instrument, only differing in the addition of the three newly proposed topics. As a result, interviewers in the test condition had to learn and use two very different instruments, while control interviewers used basically the same instrument in their Content Test cases and ACS production. Thus, test interviewers experienced more challenges in completing their overall caseload. Interviewer debriefing suggested that test interviewers had some difficulty dealing with the two very different instruments simultaneously which may have some impact on the administration of the test version.

- On the first day of CFU interviewing, we discovered a usability problem with the CFU instrument. Left unaddressed, the usability problem could have potentially impacted comparisons between the Content Test and CFU responses when looking specifically at gross difference rate or simple response variance calculations. However, we immediately implemented two steps to mitigate any data problems -- a special instruction sheet to remind interviewers about how to avoid the potential problem and a procedure to report any problems to headquarters for repair. Interviewers followed the instructions and reported 90 cases to us. Post-collection processing corrected all reported errors, though it is possible that some cases went unreported.

- The CFU universe did not include non-telephone households and vacant housing units. This only affects those question topics included in the CFU study that are related to the non-telephone household or vacant universes.

4.2. Limitations Specific to Rooms and Bedrooms

The CFU measure of room count differed from the original interview question in that rooms were defined based on their functional use (e.g. dining room, kitchen, living room, etc.) as opposed to just their physical separation. As a result, the NDRs for the rooms question may be capturing this definitional difference rather than just systematic response error.

5. RESULTS

5.1. Response to the Content Test and Content Follow-Up

Control and test treatments groups obtained equivalent response rates overall, and for each mode of collection. Similarly, response to the Content Test is comparable to response for the production ACS.

The table below gives the weighted response rates for each data collection operation and a test of differences between the control and test groups. The overall response rate reflects the final response to the initial data collection (mail and CAPI only). There were no significant differences between response rates for the control and test groups. Note that the denominator for each calculation included only eligible cases for each mode.

Table 1. Content Test Response Rates, Control vs. Test

Response Rate	Total (%)	Control (%)	Test (%)	Difference (%)	Margin of Error (%)	Significant
Overall response rate	95.7	95.8	95.5	-0.3	± 0.9	No
Mail response rate	51.3	51.5	51.2	-0.3	± 2.2	No
CAPI response rate	92.4	92.6	92.1	-0.4	± 1.7	No
CFU response rate	76.2	75.9	76.4	0.5	± 1.6	No

5.2. Results for Research Questions 1 and 2 - Will the changes to the room question improve the *accuracy* of the question? Will the changes to the bedrooms question improve the *accuracy* of the question?

The net difference rate (NDR) is used when we assume the Content Follow Up interview which asks more questions and collects more detailed data about a topic provides a better measure than the control or test versions of a question. The NDR reflects the net change between the original response and the response given for the more detailed CFU questions. In other words, since we assume the CFU provides better data, the NDR indicates to what extent the test or control version of a question over- or underestimates the topic (or category) of interest. Relative to the CFU estimate, an NDR with a negative value indicates an underestimate and a positive value indicates an overestimate. An NDR that does not statistically differ from "0" indicates that the question asked in the original test or control interview produces results similar to the more detailed question set asked in CFU. In other words, the question should not result in a systematic over- or underestimate of the topic (or category) of interest.

For the purpose of this evaluation, analysts compared the NDR calculated for the test group to that of the control group to assess which version of the question resulted in more systematic error, regardless of whether the error reflected an over- or underestimate. Thus, the analysis also provides the "Absolute Net Difference" rate by taking the absolute value of the NDR for control group and the test group.

The simple response variance (SRV) measures the random variation in respondents answers for a given response category between the first time respondents answered the control or test version of the question and the second time they answered the question as part of the CFU for the given response category. To measure the SRV, the CFU re-asks the original question (control question for control households and test question for test households). The SRV provides a measure of the reliability or consistency of a question item. The smaller the SRV, the better the reliability.

For the purpose of this evaluation, we also calculated the adjusted simple response variance (SRV). An adjustment was made to the SRV in the case where the CFU objective was not to perform a re-ask of the original question, but to obtain a "better" measure.

Data included in Tables 10 and 11 show the difference of the absolute values of the NDRs for the control and test. With the exception of the "9 or more rooms" category, the test panel collected data that was as accurate or better than that collected in the control panel in terms of simple response error. There was evidence to suggest that the relationship between rooms and bedrooms was more consistent in the test panel than the control (see section 5.6). Even though an item can be more consistent on one version, it doesn't mean that it is accurate. If a respondent misunderstands the question, he could still answer it the same way (consistently), but it could still be wrong. Of the two questionnaire items, the test item did a better job in capturing responses that were more accurate as well as consistent.

Ad hoc analysis of the NDRs by mode of data collection showed that the improvement in the underreporting of 1-room units (efficiencies) only persist for the cases that went to CAPI. This suggests that the inclusion of the "efficiency" screen improved the count of rooms.

"0 bedroom" and "1 bedroom" housing units were more accurately identified on the test version than on the control. The other categories are not statistically different.

The results support the hypothesis that the net difference rate for the test panel was equal to or better than the net difference rate for the control panel for rooms and bedrooms.

5.3. Results for Research Question 3 - Will the changes to the question and response field improve the under-reporting of total rooms?

Data included in Tables 2 and 3 provide the median number of rooms and bedrooms for the control and test versions at the national level and within the high and low response areas.

- The test panel resulted in a larger median number of rooms at the national level (5.7 rooms for the test panel vs. 5.3 for the control) and within the high (5.9 vs. 5.5) and low

(5.0 vs. 4.6) response areas. Therefore, the test version reduced the under-reporting of rooms.

- The control and test versions resulted in similar median number of bedrooms (2.7 for the test panel vs. 2.7 for the control at the national level).

The results support the hypothesis that the average number of rooms reported in the test panel was equal to or higher than the average number of rooms reported in the control.

5.4. Results for Research Questions 4 and 5 - Will the changes to the question and the response field impact the item nonresponse rate for the total rooms question? Will the changes to the question and the response field impact the item nonresponse rate for the bedrooms question?

The item nonresponse rate (INR) measures the proportion of housing unit or person responses with "missing data." *Note that the definition of missing data varies across topics.* For purposes of this evaluation, nonresponse will be considered as a questionnaire with no box checked in the rooms (or bedrooms) item or an illegible entry that has to be blanked.

Data included in Table 1 indicate:

- There were no significant differences between the item nonresponse rate for number of rooms when the test version was compared with the control at the national level (4.8 for the test panel vs. 4.1 for the control) and within the high response areas (4.6 vs. 3.9). In the low response areas, the test version resulted in a marginally significant increase in the nonresponse rate (5.5 vs. 4.6).

- There were no significant differences between the item nonresponse rate for number of bedrooms when the test version was compared with the control version at the national level (4.3 for the test panel vs. 3.4 for the control) and within the high response area (5.7 vs. 5.3). In the low response area, the test version produced a marginally significant increase in the nonresponse rate compared with the control version (5.0 vs. 4.6.)

Although there was no evidence to suggest that the test version of the room/bedroom questions improved response, the results did support the hypotheses that the response rates for the test version were similar to those using the control version. The only exception was in the low response area where there was a higher nonresponse rate on the test version question on bedrooms.

5.5. Results for Research Question 6 - Will the changes to the question and response field change the distribution of bedrooms?

Data included in Tables 7 through 9 indicate that there were a higher percentage of housing units with "0" bedrooms (efficiency apartments) and a lower percentage of 1-bedroom units at the national level as well as high and low response areas on the test panel. (Note: the decrease in 1-bedroom units for HRAs was marginally not significant) These results, in

conjunction with the higher reporting of "1" room housing units and a lower reporting of 2-room units in the national and low response areas on the test panel (Tables 4 through 6), indicate that the respondents were correctly following the new instruction for efficiency apartments.

The results support the hypothesis that the reporting of "0" bedrooms was higher in the test panel than the control panel. They illustrate the shifting of "1-bedroom units" to "0-bedroom" units, and "2-room" to "1-room" units.

5.6. Results for Research Question 7 - Will the combination of changes to both the rooms and bedrooms question improve the internal consistency of responses to the two questions?

Data included in Table 12 prove that there was less inconsistency between the rooms and bedrooms responses on the test version (3.8 percent for the test vs. 6.7 percent for the control). This was true at the national, high response, and low response areas.

The results support the hypothesis that there was more inconsistency in the reporting of rooms and bedrooms in the control panel than in the test panel at the national level and within high and low response areas.

6. SUMMARY OF EMPIRICAL RESULTS

Changes to the questions reduced underreporting of rooms, increased reporting of "0" bedrooms, and improved consistency between rooms and bedrooms while maintaining the item response rate. The net difference rate was also maintained or improved in the test panel. Systematic response error was equal or less for the test version.

The systematic response error was larger for some room categories in the test version.

Empirically, the test version performed better than the control version.

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Appendix A

CONTENT TEST INFORMATION PAGE
For
NUMBER OF ROOMS and BEDROOMS (CFU required)

Question Wording:

Current ACS Wording	Content Test Wording
How many rooms are in this house, apartment, or mobile home? *Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms.* ☐ 1 room ☐ 2 rooms ☐ 3 rooms ☐ 4 rooms ☐ 5 rooms ☐ 6 rooms ☐ 7 rooms ☐ 8 rooms ☐ 9 or more rooms *How many bedrooms are in this house, apartment, or mobile home; that is, how many bedrooms would you list if this house, apartment, or mobile home were on the market for sale or rent?* ☐ No bedroom ☐ 1 bedroom ☐ 2 bedrooms ☐ 3 bedrooms ☐ 4 bedrooms ☐ 5 or more bedrooms	**How many separate rooms are in this house, apartment, or mobile home?** *A room must be separated from adjoining rooms by walls, archways, or half-walls** • Do INCLUDE bedrooms. • Do NOT count bathrooms, porches, balconies, foyers, halls, half-rooms, or unfinished basements. Number of rooms ☐☐ **How many of these rooms are bedrooms?** *Count as bedrooms those rooms you would list if this house, apartment, or mobile home were for sale or rent. If this is an efficiency/studio apartment, print "0".* Number of bedrooms ☐☐

** Note that the inclusion of the term "half-walls" changes the Census Bureau's definition of a room.*

Research Questions & Evaluation Measures:

No.	Research Questions	Evaluation Measures
1	Will the following changes to the room question improve the *accuracy* of the question? - adding the word "separate" to the question stem - adding an instruction that defines a 'room' - using an open-ended/write-in field rather than categories	Calculate the net difference rate using the Content Follow-Up interview.
2	Will the following changes to the bedrooms question improve the *accuracy* of the question? - adding language that explicitly links the total count of rooms and the count of bedrooms - providing the heuristic/rule to use for defining a bedroom as part of an instruction - providing instructions for efficiency/studio	Calculate the net difference rate using the Content Follow-Up interview

	apartments - using an open-ended/write-in field rather than categories	
3	Will the changes to the question and response field improve the under-reporting of total rooms?	Compare distribution of total rooms between control and test versions; Compare average number of total rooms between control and test versions
4	Will the changes to the question and the response field impact the item nonresponse rate for the total rooms question?	Compare item non-response rates between the control and test versions
5	Will the changes to the question and the response field impact the item nonresponse rate for the bedrooms question?	Compare item non-response rates between the control and test versions
6	Will the changes to the question and response field change the distribution of bedrooms?	Compare distribution of bedrooms between control and test versions
7	Will the combination of changes to both the rooms and bedrooms question improve the internal consistency of responses to the two questions?	Compare internal consistency (e.g., count of bedrooms does not equal or exceed total rooms) between control and test versions

Selection Criteria:

Research Q	Criteria
1,2	Net difference rate for the test panel is equal to or better than the net difference rate for the control panel
3	The average number of total rooms reported in the test panel is equal to or higher than the average number of total rooms reported in the control
4, 5	Item non-response rates for the test panel are equal to or less than the item non-response rates for the control panel
6	The test panel has a higher count of 0 bedroom units than the control panel
7	The internal consistency between the test versions of the rooms and bedrooms questions are equal to or better than the control version

The selected version of the question will meet the following minimum criteria:

- The best internal consistency between the rooms and bedrooms question (statistically lower reports of number of bedrooms equal to or greater than the total number of rooms) and the highest average number of total rooms

Cognitive Testing of Proposed Items on Housing for the American Community Survey

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EXECUTIVE SUMMARY

Background

The American Community Survey (ACS) at full implementation levels will mail a paper questionnaire to about 250,000 addresses. The Census Bureau will collect data via Computer Assisted Telephone Interviewing (CATI) and Computer Assisted Person Interviewing (CAPI) with those households not responding to the mail survey. The ACS contains both questions addressing housing and demographic information.

The Census Bureau is considering revising a number of questions in the ACS section devoted to housing. It is hoped the revisions will improve data quality. As a pretest of these proposed revisions, the Census Bureau asked Westat to conduct cognitive interviews with persons residing in a variety of housing types. The purpose of this task was to examine the cognitive aspects of responding to the questions on housing, in particular, potential response error that might be associated with the proposed revisions. For several of the proposed revisions, Westat tested two alternatives in order to assist the Census Bureau in deciding on the most appropriate revision.

Method

Westat conducted 44 cognitive interviews with individuals from the Washington, DC and Baltimore, MD areas utilizing both mail (self-administered) and telephone (interviewer administered) survey modes. Participants were owners and renters in five groups of housing types:

- Single family homes
- Modular/panelized homes
- Mobile homes
- Multi-room apartments/condominiums
- Studio/efficiency apartments

Participants were recruited through a variety of measures including advertisements in newspapers, on the internet, "word of mouth" referrals from Westat staff, and flyers placed in mobile home communities. The volunteers were screened for eligibility prior to being interviewed. The interviews were conducted at Westat's headquarters in Rockville, MD, and in hotel conference rooms in Baltimore, MD and Washington, DC. Almost all of the interviews were audio-taped (with the participant's permission) and participants were paid a $40 incentive.

Key Findings

Description of building

Most participants easily described their homes consistent with the Census Bureau's intent. However, the interviews suggested that adding the phrase "*or manufactured home*" to the category meant strictly for mobile homes may result in frequent misclassifications on the part of persons living in modular and panelized homes. Thus, Westat recommends that this proposed change to the mobile homes category *not* be made. The Census Bureau might also want to consider future work designed to clarify the distinction between townhouses and condominiums for respondents.

Age of home

The interviews suggested that home owners can easily report the precise age of their home, but many renters cannot. Westat recommends that an alternative making use of closed-ended categories, representing decades, would be a better approach for the ACS (as compared to a second version tested which would require all respondents to enter a precise year).

Number of rooms and bedrooms

Participants frequently counted rooms in their homes in a manner inconsistent with the Census Bureau's intent. The findings suggest that current data may reflect over-counting of rooms, since respondents often count as a room spaces not separated from adjoining rooms by floor to ceiling walls. Findings also suggested that having respondents write in the number of rooms and bedrooms holds no disadvantage to marking a closed-ended category, and that linking the items asking for the number of rooms and bedrooms may be better than asking them in completely separate questions. Westat recommends using an instruction to help respondents better understand how the Census Bureau would like rooms to be counted. Two possibilities are provided in this report.

Plumbing facilities, kitchen facilities, and telephone service

Findings indicated that the proposal to collect this information as a series of seven short "yes/no" items should work well for ACS respondents. Also, the proposed addition of an instruction to "*Include cell phones*" will be critical for capturing telephone service in the increasing number of households that no longer make use of a landline. Westat also recommended that the Census Bureau consider changing the phrase "*piped water*" to "*running water*." Furthermore, changing "a sink with a piped water" to "a sink with a faucet" may help respondents to distinguish this item from another item asking about hot and cold piped water.

Home value

Findings indicated that a version of this question requiring respondents to write in a dollar amount reflecting what they believe their home would sell for may be rather difficult and burdensome for ACS respondents. Some participants pointed out that one cannot know exactly what one's home would sell for. Thus, Westat recommended that the Census Bureau keep collecting this data through closed-ended categories that present respondents with a range of values to choose from. Also, further work should perhaps explore how to get the best information on this question from mobile home owners who rent the lot on which their mobile home resides.

First property loan

While participants were often perplexed by some of the terminology this question presents, they virtually always answered it correctly (i.e., consistent with the Census Bureau's intent). Of the two questionnaire layouts the Census Bureau proposed for collecting this information, findings indicated one was much more straightforward than the other.

The full set of Westat recommendations for the ACS migration questions, for both the mail and telephone modes, is shown in Appendix C.

1. BACKGROUND

The U.S. Census Bureau recently reached full implementation of the American Community Survey (ACS). Through multi-mode data collection, it will provide annual estimates of important demographic, socio-demographic and housing characteristics for the nation, states, and counties. Each month, a paper questionnaire will be mailed to about 250,000 addresses. The Census Bureau will collect data through a Computer-Assisted Telephone Instrument (CATI) with those not responding to the mail survey, and a sub-sample of non-respondents to both mail and CATI will go to CAPI.

The Census Bureau is considering revising a number of ACS questions on housing characteristics, in order to improve data quality on this topic. The Census Bureau asked Westat to conduct cognitive interviews with persons residing in a variety of housing types. The purpose of this task was to examine the cognitive aspects of responding to the questions on housing, in particular the proposed revisions being considered. We examined aspects of the questions that might contribute to response error in the proposed additions noted above. For example, we sought to determine whether respondents' interpretations of the questions and response categories match the bureau's intent. In addition, we examined whether respondents have difficulties with the wording of the questions, or difficulties in recalling the information requested. Both mail and telephone versions of the housing questions were tested.

In this report we describe our methods for conducting the study, our findings, and our recommendations for the key housing questions of interest.

2. METHOD

We conducted cognitive interviews with 44 individuals from the Washington, DC and Baltimore, MD areas. In this chapter we discuss the study design, our process for recruiting study participants, and describe the participants. We also describe our procedures for conducting the cognitive interviews.

2.1 Study Design

The Census Bureau requested that we cognitively test the ACS items of interest in forms suitable for two survey modes: a) mail (self-administered), and b) telephone (interviewer-administered). In addition, we tested two versions of a number of items designed for the mail mode. The Census Bureau further requested that we test the items with both owners and renters in five groups of housing types:

- Single family homes
- Modular/panelized homes
- Mobile homes
- Multi-room apartments/condominiums
- Studio/efficiency apartments

Table 2-1 shows how respondents were distributed across the interview modes completed.

Table 2-1.
Completed Interviews by Housing Type and Survey Mode

Type of home	Mail				Telephone		Total
	Owners		Renters				
	Ver. 1	Ver. 2	Ver. 1	Ver. 2	Owners	Renters	
Mobile Homes	1	2	--	--	2	--	5
Modular/ panelized homes	1	--	1	--	2	--	4
Single family homes	5	3	2	2	2	2	16
Multi-room apartments & condos	2	2	2	2	2	3	13
Single-room /efficiency	--	--	2	2	--	2	6
Total	9	7	7	6	8	7	44

2.2 Recruitment

We recruited participants for this project through a variety of means. We placed an ad for research volunteers in the *Gazette*, a weekly newspaper serving Montgomery, Prince George's, and Frederick counties of Maryland. We also placed ads in the *Washington City Paper* a weekly Baltimore newspaper, and posted flyers in a mobile home community in Montgomery County. The ads specified a need for volunteers, both owners and renters, in the five housing types. Advertising was done over the Internet through ads posted to www.craigslist.com and several neighborhood email newsgroups. Approximately 350 persons contacted Westat in response to these ads, and this group largely served as our pool of potential study participants. A small number of persons were recruited by "word of mouth" referrals from Westat staff (Westat employees were not eligible for participation) and study participants. Volunteers were screened for eligibility on an "as needed" basis prior to being scheduled for interviews their household. The recruiting screener used for this study is included in Appendix A.

With respect to the 5 housing types of interest, the original recruiting targets were generally met or exceeded:

- 6 renters/10 owners of single family homes
- 1 renter/3 owners of modular/panel homes
- 5 owners of mobile homes
- 7 renters/6 owners of multi-room apartments/condominiums
- 6 renters of studio/efficiency apartments

At the request of the Census Bureau, Westat recruited participants with the following characteristics as well:

- Speak English as a second language (2);
- Received government assistance in paying for food within the past year (3);
- Hold a home equity loan or home equity line of credit (5), and;
- Own a single family home built since 2000 (2).

Table 2-2 below presents a demographic summary of the 44 study participants.

Table 2-2
Demographic Summary of Cognitive Interview Participants

Demographic Characteristics	Number of Participantss
Gender	
Male	10
Female	34
Age	
18-30	4
31-45	15
46-60	18
Over 60	7
Education Completed	
Less than high school	2
High school/GED	9
Some college	14
College degree	8
Graduate school	11
Race/Ethnicity	
White	24
Black/African-American	17
Hispanic/Latino	2
Other	1

2.3 Interview Logistics and Procedures

The interviews were conducted by Westat staff and adhered to a semi-structured interview guide consisting of the following three elements:

- **Interview introduction**: Here we explained the purpose of the project and assured participants that all information they share will be treated as confidential. Participants were also informed that the interviews were to be audio-taped, and (if applicable) that Census Bureau staff were observing behind a one-way mirror. Participants were also asked to sign consent forms.

- **Administration of the ACS**: Participants were asked to respond to the initial demographic questions contained in the ACS for each member of their household. Then the ACS questions on housing were administered. Participants were asked to respond to these questions through one of two survey modes:

- **Mail**. These participants were provided a paper-and-pencil copy of the ACS specially prepared for the cognitive interviews. They were given a pen and asked to fill it out at their own pace, but reading aloud and "thinking aloud" as they did so. The cognitive interviewer closely observed and took notes of any apparent difficulties experienced by the respondent.

- **Telephone**. The cognitive interviewer entered the room behind the one-way mirror and called into the room where the participant sat. The participant answered a phone placed on the table upon hearing it ring. The interviewer then administered the ACS items in much the same way as a Census telephone interviewer would (reading the questions, as worded).

- **Cognitive debriefing:** Here, the Westat interviewer followed up on any observed confusion or difficulties that participants may have experienced when answering the key ACS items of interest. For example, verbal cues such as hesitation or changing one's answer, as well as nonverbal cues such as eye rolling can suggest evidence of respondents' difficulty in understanding a question. The interviewer also probed as to how he or she interpreted the key questions. Most of the probing was done concurrently with administration of a questionnaire, but some occurred after administration of the ACS.

The guide for conducting the cognitive interviews (mail version) is shown in Appendix B.

A large number of the cognitive interviews were conducted onsite at Westat's headquarters in Rockville, MD. These interviews were conducted in a qualitative interviewing suite equipped with a one-way mirror for observation purposes. Some interviews were conducted at downtown Washington, DC and Baltimore, MD hotel conference rooms. Interviews typically lasted 30 to 45 minutes. Participants received an incentive payment of $40. Census Bureau staff observed several of the interviews

3. FINDINGS

3.1 Reporting Type of Home

The first question in the ACS Housing section asks respondents to describe the home at the sample address. A proposed change would add the term "manufactured home" to the response category for mobile homes:

Which best describes this building?
Include all apartments, flats, etc., even if vacant.

- ☐A mobile or manufactured home
- ☐A one-family house detached from any other house
- ☐A one-family house attached to one or more houses
- ☐A building with 2 apartments
- ☐A building with 3 or 4 apartments
- ☐A building with 5 to 9 apartments
- ☐A building with 10 to 19 apartments
- ☐A building with 20 to 49 apartments
- ☐A building with 50 or more apartments
- ☐Boat, van, etc.

(mail version)

However, some at the Census Bureau are concerned that this change may result in many people who live in modular and panelized homes answering by classifying their home in this category, which is not the Census Bureau's intent.

Findings from the cognitive interviews suggest that this could indeed be a problem. Two of the 4 modular/panelized home dwellers placed their home in the category meant for mobile homes. Both participants said their homes are modular homes, and put it in this category because they believed it is the same as a manufactured home:

> *"It is pre-manufactured at a factory and parts are thrown together in an expedited manner on the site...."*

> *"I would say it's a manufactured home, it's a modular house."*

A third participant, who classified his panelized house elsewhere, noted during probing that his home could have been classified into this category as well. It's also worth noting that one of our mobile home owners said that a manufactured home is different from a mobile home:

"A manufactured home I assume you don't move....it's different. It's usually built and taken to the site in two pieces...it's not on tires."

Otherwise, participants generally described their home easily and correctly with this question. There were a few exceptions though. A couple of persons live in what they described as "townhouse condos." One participant who filled out the mail survey readily classified her home as a "one-family house attached to one or more houses." But the other participant, responding in the telephone mode, initially answered that her home does not fall into one of the available categories:

"It is not really an apartment but it depends on how you look at it....technically it is a townhouse condominium, but some people call a house like that an apartment....it's one building divided up into different sections."

This participant ultimately placed her home in the "building with two or more apartments" category. It's important to note that the initial set of response categories presented to telephone respondents ("A mobile or manufactured home," "Single-family house," "Building with two or more apartments," and "Boat, van, etc.") differ from what is presented to mail respondents. Given that it is not clear to some (including us) what precisely distinguishes a townhouse from some condominium/apartment buildings, this may contribute to mode differences. Specifically, the fact that the categories presented over the telephone do not explicitly refer to attached housing (as is done in the mail survey), may result in townhouses being classified more often as apartments in the telephone survey, relative to the mail survey.

Another source of confusion concerned single-family homes that had been divided into two different living quarters. For example, one participant lived in a house that had been fully converted into two separate apartments. After some hesitation, this person classified their home as a "building with 2 apartments," which we assume would be correct. But another participant lived in a home (shared with his sister and her boyfriend) that had been informally divided into two living spaces. He lived in the finished basement area (which has its own entrance from the outside), while the other two persons lived on the main level of the house. All three share the kitchen on the mail level. He also classified the home as a "building with 2 apartments," but the details suggest it might have been more accurately classified as a "one-family house."

Recommendation. The findings clearly suggest it would be safer for you to *not* add a reference to manufactured housing to the category meant strictly for mobile homes. And although we are not sure how the distinction between townhouses and condominiums/apartments can be made more clear, consider altering the initial categories presented to telephone respondents so as to minimize mode effects, such as:

A mobile or manufactured home
Single-family house, either detached or attached to other houses
Building with two or more apartments
Boat, van, etc

3.2 Reporting Age of Home

The next question in the ACS Housing section asks respondents to indicate the age of their homes. The Census Bureau is interested in obtaining a precise year the building was first built, especially for more recent construction, so that there is more flexibility in how the data is tabulated. But requiring all respondents to provide a precise year may not be feasible for older homes. Thus, the Census Bureau asked Westat to test two alternatives for this question:

About when was this building first built?

- o 2000 or later→*Specify Year*
  - ☐☐☐☐
- o 1990 to 1999
- o 1980 to 1989
- o 1970 to 1979
- o 1960 to 1969
- o 1950 to 1959
- o 1940 to 1949
- o 1939 or earlier

(mail version 1)

About when was this building first built?
If specific year is not known, estimate decade. Ex: 1950, 1960, etc.

Year ☐☐☐☐

(mail version 2)

Participants readily understood this question to be asking when the home was constructed, as opposed to being refurbished, when an apartment building was converted, etc.:

> *"When the piece of land was dug, the foundation poured, and the initial structure created."*
>
> *"When the original structure was completed."*
>
> *"When the building was put up, in 1915."*

One mobile home owner pointed out that the question could be interpreted in two ways, as asking: 1) when his mobile home was put on the site, or 2) when it was assembled at the factory. He said he chose to interpret it the first way, since he did not know when the home was built – he had bought the home new, however, so presumably it made little difference for him. Another mobile home owner initially misread the question and answered with the year she had moved in (2001), and upon our probing immediately realized she should have answered with "2000," since the home had been built new for her that year.

Virtually all of the participants who own their homes were able to indicate a precise year (or very close to it) when their home was built. However, over half of the renters had difficulty

with this question due to little or no knowledge of when a home was built. Many of these renters answered the question by guessing, on the basis of how the building looks, knowledge of how long some neighbors had lived in the building, or a general knowledge of when a neighborhood became popular as a place to live. Some renters seemed fairly confident that they could estimate the decade in which their home was built. But some renters had difficulty even guessing a decade. One renter even chose to enter the year that she had moved in, rather than trying to estimate when the building had been constructed.

Two participants receiving version 1 of the mail survey had homes built since 2000. Both easily saw the entry box for writing in a year and did so. A few persons with older home entered a precise year in the box as well, in addition to marking a decade. One person voiced some initial confusion over the format of version 1, since she wondered if she was supposed to do both (i.e., enter a year and mark a decade) – but then realized on her own that the box for entering a year only applies to those with homes built since 2000.

Participants often overlooked the instruction in version 2 informing them that a decade can be estimated if the year is not known. In fact, when we asked participants to compare the two versions, renters (and even some owners) complained that version 2 requires one to answer with a precise year, rather than indicate a decade as in version 1. Finally, one participant (a renter who did not know when her home had been built) that had been administered version 2 discussed how seeing the decades listed in version 1 helped to stimulate her thinking regarding information she had seen suggesting the building had been built in the 1980s. For this respondent, at least, the response categories of version 1 may have served as useful cognitive cues, easing the burden of recalling an appropriate answer.

Recommendation. The findings suggest version 1 would be a better format for asking about age of home in the ACS survey. The disadvantage, relative to version 2, is that it requires a bit more space on the page. To counter this, you might consider dividing the list of decades into two columns.

3.3 Reporting Number of Rooms and Bedrooms

The ACS collects information on the number of rooms and bedrooms in each home. However, the Census Bureau is aware of problems in this data. For example, some respondents report that their homes have the same number of rooms as bedrooms. In the hope of rectifying these problems, the bureau asked us to include two proposed new versions in the cognitive testing:

7a. How many rooms are in this house, apartment, or mobile home? *Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms. Do INCLUDE bedrooms.* ☐☐ **7b. How many of these rooms are bedrooms?** *Count as bedrooms those rooms you would list if this house, apartment, or mobile home were for sale or rent. If this is an efficiency/one-room apartment, print '0'.* ☐☐ **(mail version 1)**	**7. How many rooms are in this house, apartment, or mobile home?** *Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms. Do INCLUDE bedrooms.* o 1 room o 2 rooms o 3 rooms o 4 rooms o 5 rooms o 6 rooms o 7 rooms o 8 rooms o 9 or more rooms **8. How many bedrooms are in this house, apartment, or mobile home?** *Count as bedrooms those rooms you would list if this house, apartment, or mobile home were for sale or rent. If this is an efficiency/one-room apartment, mark 'No bedroom'.* o No bedroom o 1 bedroom o 2 bedrooms o 3 bedrooms o 4 bedrooms o 5 or more bedrooms **(mail version 2)**

We determined through probing that over half of the interview participants misreported the number of rooms in their home. In general, the error was *overcounting*: counting open areas such as combined living and dining spaces as two rooms. Participants usually had a reasonable basis for doing this, noting such things as different heights of the ceiling in the two spaces, different flooring, or separation based on bookcases or cabinets. But according to the Census Bureau's definition, spaces such as this are to be counted as one room if there is no floor to ceiling wall separating the two areas. There was also some tendency to count unfinished basements and/or laundry/utility spaces as rooms.

We observed some tendency for participants filling out the mail version to think the first item is asking only for the number of bedrooms. For example, a couple of persons seemed to skim the wording of the first item, yet focused their attention on the instruction "Do include bedrooms." Generally, these persons quickly realized their comprehension error upon reading the second item asking for the number of bedrooms (one participant for whom English is a second language did not, however).

Participants appeared to be much more often correct when reporting the number of bedrooms. A fair number of participants noted that there are rooms in their home meant to be bedrooms that they do not actually use as bedrooms, but instead use as sewing rooms, TV rooms, and offices. These participants generally counted these rooms as bedrooms, consistent with the Census Bureau's intent. One respondent who neglected to count a bedroom she had converted into an office made the error due to not having read the instruction accompanying the item about what to count as a bedroom.

As for the two alternative versions we tested, we did not observe a significant advantage for one version over the other. When we asked respondents to compare the two versions, few seemed to have a strong opinion on the matter, with most suggesting it would make little or no difference to them. Some commented that the checkboxes are a waste of space, since writing in an answer is easy enough to do. And while almost no one preferred two completely separate questions for the counts of rooms and bedrooms, a few commented that the linking of the two questions (as in version 1) is a good idea, noting that this approach might facilitate reading both items before answering, and encouraging one to consider the consistency of answers across the two items.

Finally, we observed some difficulty in the telephone interviews. The first item in the series for the telephone mode applies only to those having reported living in an apartment. It reads: "*Is this an efficiency or one room apartment?*" Some participants did not initially realize that it is a "yes/no" item – instead, they thought it was asking them to classify their home as either an efficiency or a one room apartment. A couple of persons misheard the phrase "one room" as "one bedroom." Also, this item seems to assume that all efficiency apartments have only one room, and this is a potential source of confusion.

Recommendation. Providing respondents with more information as to how to count the rooms in their homes should increase the accuracy of reporting. Consider adding an instruction such as one of the following:

Count only finished rooms separated by a wall.

Rooms must be separated by archways or walls that extend out at least 6 inches.

The findings further suggest no advantage for the use of closed-ended categories, and perhaps a slight advantage for linking the items on rooms and bedrooms together. Thus, we recommend the use of the proposed version 1. In future work, you might also explore the possibility of first asking respondents to report the number of bedrooms, and then the number of *other* rooms in their home. This approach would avoid the redundancy that currently exists in the two items, in that bedrooms are to be counted for both. Survey respondents generally expect researchers do not want redundant information to be reported – thus the redundancy may be contributing to the problems in the data for these items.

In the telephone mode, consider revising the item asked of apartment dwellers to:

Is this an efficiency or studio apartment?

3.4 Reporting Plumbing Facilities, Kitchen Facilities, and Telephone Service

The current ACS questionnaire also collects data on whether or not homes have *complete* plumbing facilities (i.e., hot and cold piped water, flush toilet, and bathtub/shower), *complete* kitchen facilities (i.e., sink with piper water, stove/range, and refrigerator), and telephone service. Data on complete plumbing and kitchen facilities are collected by means of two separate questions, each requiring a single yes/no response. In other words, a respondent should answer "no" if their kitchen lacks a stove or range. Data from the current questions appear somewhat unreliable, so the Census Bureau has proposed breaking the various plumbing and kitchen facilities into various items. Furthermore, an instruction meant to capture households with cell-phone service only was added. Thus, Westat was asked to cognitively test the following set of items:

Does this house, apartment, or mobile home have:

	Yes	No
a. hot and cold piped water?	o	o
b. a flush toilet?	o	o
c. a bathtub or shower?	o	o
d. a sink with piped water?	o	o
e. a stove or range?	o	o
f. a refrigerator?	o	o
g. telephone service from which you can both make and receive calls? *Include cell phones.*	o	o

(mail version)

This series of items was generally answered very easily and quickly. Most participants simply went down the list, checking every "yes" box, appearing to give it little thought. Some laughed and wondered if the items were necessary ("*I feel like these questions are from 1930*"), though after brief consideration they realized that there may still be some homes in the U.S. without some of these features. A few people were a bit confused by the phrase "piped water," as it was something they had not heard before. One participant even left item (a) blank because she wasn't familiar with the phrase. In addition, some viewed "a sink with piped water" to be redundant with the first item: "hot and cold piped water." A few commented that they couldn't imagine a home having hot and cold water, yet no sink. But again, after thinking about it briefly participants typically realized that their notions did not necessarily apply to all homes.

At item (g), participants generally did not associate their cell phones with their homes:

"I don't associate a cell phone as being a function of my home – it's not a feature of my home any more than a TV set might be."

"[Cell phones] are mobile....not connected to a piece of real estate."

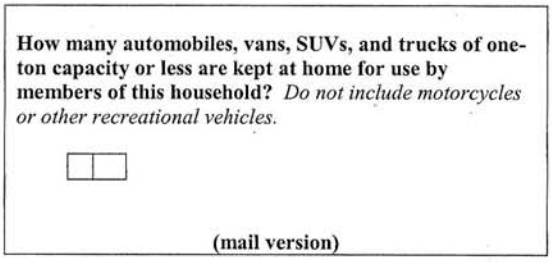
Nevertheless, four participants in this study lived in households that lacked landline telephone service (all four had cell phones), and each answered the question correctly. The instruction in item (g) to include cell phones, while perceived as being a bit odd, was critical for these participants:

"It gave me pause, because if you didn't have that part that says to include cell phones, then I would think 'well no, I don't have a phone.'"

Recommendation. The study findings suggest that the proposed items should be very easy for ACS respondents to understand, relative to the current ACS versions seeking single yes/no responses for combinations of the above items. So we recommended the use of the proposed version – but for item (a) consider changing the phrase "piped water" to "*running water*." Also consider changing item (d) to "*a sink with a faucet*."

3.5 Reporting Number of Vehicles

The ACS also includes a question asking for the number of vehicles kept at the home for use by household members. A proposed new version would add a reference to sport-utility vehicles (SUVs), and an instruction to not include motorcycles or other recreational vehicles. Furthermore, a revised format would require writing in the number, rather than marking a category:



This question was virtually always answered very easily. Although it is a rather long question for telephone administration, it did not appear to be a problem in this mode either.

Three participants said they counted trucks kept at home. When asked to tell us what the phrase "one-ton capacity or less" means to them, two of these participants thought it referred to the weight of the truck, rather than how much weight the truck can carry or pull. Another

participant was confused by the phrase, assuming it applied to all vehicles. She counted three sedans for her answer, but stated:

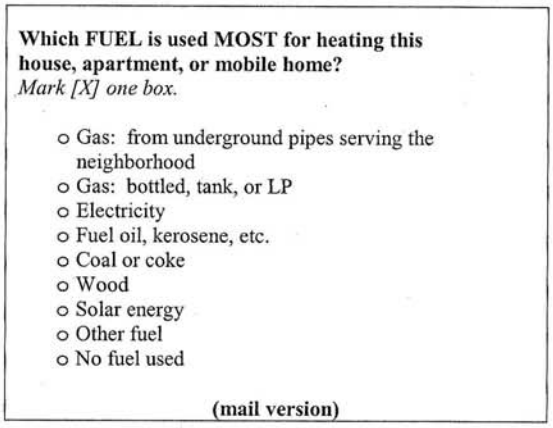
"It does become confusing as I don't know how much they weigh."

Recommendation. The findings suggest that the new format should work fine. But consider a minor change in the wording to address misunderstanding of the "one-ton capacity" phrase:

How many automobiles, vans, SUVs, and trucks of one-ton carrying capacity or less are kept at home for use by members of this household?

3.6 Reporting Main Heating Fuel

The ACS also collects information on the main source of heat for homes. However, many respondents mark more than one response in the questionnaire. So a proposal was made to add an instruction to address this:



Which FUEL is used MOST for heating this house, apartment, or mobile home?
Mark [X] one box.

- o Gas: from underground pipes serving the neighborhood
- o Gas: bottled, tank, or LP
- o Electricity
- o Fuel oil, kerosene, etc.
- o Coal or coke
- o Wood
- o Solar energy
- o Other fuel
- o No fuel used

(mail version)

The most notable observation we can make from the cognitive interviews on this item is that renters often do not have a strong knowledge of how their homes are heated. For example, two guessed that their apartments are heated by electricity, yet discussed how in the fall they have to wait until their landlords inform them that the heat is available (which suggests that gas would be the correct answer). In addition, two persons did not know the fuel source for the radiators which provide heat to their homes.

Even though many participants relied on more than one heat source, we observed very few instances of marking more than one answer. Most found it quite easy to indicate the one

source they use most, as the second source was usually a fireplace or otherwise confined to one room. One respondent marked two choices only because she neglected to cross out her first response, which did not reflect the source she used most. Another respondent could not choose a single response, stating one fuel is used to heat the first floor while another fuel is used for the second floor, and the cost of the two fuels is roughly the same.

In the telephone mode, asking the question resulted in some minor confusion in two cases. These participants initially misinterpreted the question as asking for fuels used for the water heater and oven, in addition to that used for home heating. However, the confusion was quickly cleared up once the interviewer probed for the fuel that used most.

Recommendation. Other than the knowledge problem that some renters experience, the findings suggest that relatively few respondents should have difficulty choosing a main source of heat. So we recommend the use of your proposed version.

3.7 Reporting Food Stamp Benefits

A proposed new version of this ACS question refers to a "benefit card," in addition to food stamps, since most states are now providing this benefit in the form of a debit card:

IN THE PAST 12 MONTHS, did anyone in this household receive Food Stamps or a Food Stamp benefit card?

o Yes
o No

(mail version)

Three participants were recruited as having received government assistance in paying for food within the past year. Each answered "yes" to this question, and all were quite familiar with the "benefit card" concept. No problems were observed.

Recommendation. We recommend the use of your proposed version in the ACS.

3.8 Reporting Home Value

The ACS asks respondents who own their residence to report its value – that is, how much they believe the home would sell for if it were for sale. The Census Bureau asked Westat to cognitively test two new proposals for this question. One version was closed-ended with revised categories reflecting the escalation in housing values that has occurred in the U.S. The second version, which would save space on the instrument, would require respondents to write in a dollar amount. Both versions reflected a change in the question wording – in the past, this question has been preceded by "*What is the value of this property.*" This was removed to shorten the wording. These two versions are shown below:

How much do you think this house and lot, apartment, or mobile home and lot would sell for if it were for sale?	**How much do you think this house and lot, apartment, or mobile home and lot would sell for if it were for sale?**
o Less than $30,000 o $30,000 to $39,999 o $40,000 to $49,999 o $50,000 to $59,999 o $60,000 to $69,999 o $70,000 to $79,999 o $80,000 to $89,999 o $90,000 to $99,999 o $100,000 to $124,999 o $125,000 to $149,999 o $150,000 to $174,999 o $175,000 to $199,999 o $200,000 to $249,999 o $250,000 to $299,999 o $300,000 to $399,999 o $400,000 to $499,999 o $500,000 to $749,999 o $750,000 to $999,999 o $1,000,000 or more	Amount-*Dollars* $ _____.00
(mail version 1)	**(mail version 2)**

Participants readily understood this question to be asking about the market value of their home. In fact, when we asked them to tell us in their own words what the question is asking, they often referred to *value:*

"The current market value of your home."

"What is the value of your property?"

"They're trying to determine house values."

In general, the question was easily answered. Participants based their answers on recent nearby home sales, appraisals (obtained for loan refinancings, home equity loans, etc.), and tax assessments. However, one group of participants did have difficulty with this question. All five mobile home owners in this study *rent* the lots on which their homes reside. Yet the question asks them to estimate what their "*mobile home and lot*" would sell for. These participants pointed out that they would not be able to sell the lot. Four of these participants thus based their answer only on the value of the mobile home, while the fifth left the question blank since she did not know the value of the lot.

Participants viewed version 1 of this questions as being significantly easier than version 2. Some noted that one cannot really know precisely what one's home would sell for, thus choosing from categories that offer ranges is much more appropriate for the question. Participants felt that version 2 requires too much precision and as a result, is quite burdensome.

Recommendation. The findings suggest version 1 (categories with ranges) offers the best format for this question. Currently, we do not know of a solution to the confusion on the part of mobile owners who rent their lots. We would *not* recommend changing the phrase "mobile home and lot" to just "mobile home," as this would almost certainly confuse mobile home owners who do also own their lots. Perhaps future work should explore this issue and a potential solution.

3.9 Reporting First Loans on Property

The ACS collects information on the monthly payments respondents make on first loans for their properties, and whether or not these payments include real estate taxes and hazard insurance. A significant problem with this question in the past has been the double-counting of mobile home installment loans, which were addressed in a separate question. The Census Bureau asked us to test two new versions, both of which would combine the collection of information on mobile home installment loans with first property loans:

a. Do you or any members of this household have a mortgage, deed of trust, contract to purchase, mobile home installment loan, or similar debt on THIS property? *Mark [X] all that apply.*

- o Yes, mortgage, deed of trust, contract to purchase or similar debt
- o Yes, mobile home installment loan
- o No-*Skip to ...*

b. How much is the regular monthly mortgage payment on THIS property? *Include payment only on FIRST mortgage, contract to purchase, or mobile home installment loan.*

Monthly amount-*Dollars*
$_____.00

OR

- o No regular payment required-*Skip to ...*

c. Does the regular monthly mortgage payment include payments for real estate taxes on THIS property?

- o Yes, taxes included in mortgage payment
- o No, taxes paid separately or taxes not required

d. Does the regular monthly mortgage payment include payments for real estate taxes on THIS property?

- o Yes, taxes included in mortgage payment
- o No, taxes paid separately or taxes not required

(mail version 1)

a. Do you or any members of this household have a mortgage, deed of trust, contract to purchase, mobile home installment loan, or similar debt on THIS property? *Mark [X] and provide payment amounts for all that apply.*

	Monthly Payment Amount-*Dollars*
o FIRST mortgage, deed of trust, contract to purchase, or similar debt	$_____.00
o Mobile home installment loan	$_____.00
o No mortgage or similar debt on THIS property-*Skip to 23a*	

b. Does the monthly mortgage payment on this property include:

	Yes	No
a. Real estate taxes?	o	o
b. Fire, hazard, or flood insurance?	o	o

(mail version 2)

Participants often expressed some confusion at these items, in both mail versions as well as the telephone mode. Usually the confusion stemmed from some of the terms used in these items, such as "deed of trust," "first mortgage," "similar debt," and so on. As one person noted regarding "deed of trust:"

> *"I wouldn't equate it with a mortgage...your deed of trust is your paperwork that outlines everything about your property...I wouldn't lump that in."*

But participants ultimately put their confusion aside and appeared to answer the items correctly. For example, they excluded home equity loans from their reported mortgage amounts. However, the only mobile home owner in the study currently with a loan (the rest reported owning their

mobile homes free and clear) reported that he has a mortgage, and not a mobile home installment loan. He said that he had heard of a mobile home installment loan before, but insisted that his loan was a mortgage, and that this was the term his loan officer and real estate agent used for it. This lack of clarity in the distinction between mortgages and mobile home installment loans is perhaps not a serious issue if the new version avoids the double-counting of these types of loans.

Several participants found the layout of version 2 to be confusing, especially in comparison to version 1:

> *"[Version 2] makes me feel like I'm missing something that I skipped over and I'm supposed to fill out."*

> *"[Version 2] has a lot of ambiguity – you have to stop and think about what the question is trying to say."*

Participants liked how version 1 first asks for a yes/no response, and then asks for the monthly payment amount. This was viewed as being much more straightforward than version 2. For example, one person noted that version 2 seems to assume that he has a mobile home installment loan, which he has never had. And at least one participant who owns her home free and clear said that it is more difficult to find the "no" response in version 2, relative to version 1.

Recommendation. Overall, the findings suggest version 1 is the more effective approach. But we would recommend that one aspect of version 2 be used for the ACS: the formatting of items determining whether the monthly mortgage amount includes taxes and insurance (it is shorter and no problems were observed with it). So our recommendation would be the following:

a. Do you or any members of this household have a mortgage, deed of trust, contract to purchase, mobile home installment loan, or similar debt on THIS property? *Mark [X] all that apply.*

- o *Yes, mortgage, deed of trust, contract to purchase or similar debt*
- o *Yes, mobile home installment loan*
- o *No-Skip to ...*

b. How much is the regular monthly mortgage payment on THIS property? *Include payment only on FIRST mortgage, contract to purchase, or mobile home installment loan.*

Monthly amount-Dollars
$_____.00
OR
- o *No regular payment required-Skip to ...*

c. Does the monthly mortgage payment on this property include:

		Yes	*No*
a.	*Real estate taxes?*	*o*	*o*
b.	*Fire, hazard, or flood insurance?*	*o*	*o*

3.10 Other Observations from the Housing Section

In this section, we discuss several other notable observations from the cognitive interviews. The question numbers below refer to those in the Housing section of the *current* ACS questionnaire.

- **Q14a-d (monthly utility costs).** Some participants mentioned that they are enrolled in payment plans which equal payments each month over the course of a year. The payment amount gets adjusted once a year, based on the household's gas/electricity usage. It was not clear to these participants whether they should write in the amount they paid, or write in an amount reflecting their usage (some said their statements do indicate what the cost would have been if they were not on this plan). Also, it was not always clear to participants in the telephone mode that they should answer "no" (no one in the household pays) when the utility cost is included in the rent. But having a code for "included in rent" in the follow-up question asking for the monthly amount would effectively deal with this problem;

- **Q16 (monthly condominium fee).** Two of our mobile owners who rent their lots wondered if they were supposed to report their lot rent at this question. One decided it did not fit here, but the other one did. She thus double-counted this cost, since she also reported it at Q24 (the appropriate place for this cost);

- **Q20 (annual real estate taxes).** This question does not really apply to mobile home owners who rent their lots, since they do not pay this cost themselves. One mobile home owner tried to estimate how much of her rent payment goes to property taxes, and entered that amount. Others left it blank, stating they had no idea of what the appropriate amount would be.

- **Q17 (own versus rent).** Two participants in the telephone mode experienced some difficulty comprehending this question. Both were renters – the question forces these respondents to attend to much material that does not apply to them before they hear response options for renters. Perhaps this could be handled more easily by first determining whether the home is owned or rented, then following up as appropriate regarding the existence of a mortgage or whether rent is paid.

4. CONCLUSIONS

In this chapter we discuss the major conclusions we believe can be drawn from this study. Of course, the usual cautions for interpreting cognitive interview results apply here. The participants were volunteers paid an incentive to respond and share their reactions to a part of the ACS instrument. The proposed recommendations should also be closely examined and tested in the field. Although the cognitive laboratory context is rather artificial, the interview findings hopefully have provided useful insights into potential respondent concerns and sources of confusion underlying response errors in the ACS Housing questions.

The most significant conclusions we would derive from this study are as follows:

- With rare exceptions, respondents can accurately report the type of housing they live in. But our findings suggest that the proposed addition of the phrase "or manufactured home" to the category meant for mobile homes could be very problematic (increase misreporting) for those living in modular/panelized homes. Also, future work should explore how the distinction between condominiums and townhouses can be clarified for respondents.

- These interviews suggest a substantial degree of error may exist with current reports of the number of rooms in homes. Respondents are not aware of the Census Bureau's intent to count only rooms clearly separated from adjoining rooms by a floor to ceiling wall. We have recommended an instruction for addressing this problem in the ACS, but this issue could undoubtedly benefit from further study. This future should also explore the possible benefits of reducing the redundancy that currently exists in the items asking for the number of rooms and the number of bedrooms (bedrooms are counted in both items).

- Asking respondents to report a precise dollar amount that they believe their home would sell for is overly difficult and burdensome. Also, asking for home values from mobile home owners who rent their lots is problematic. Future work might explore how this issue can be effectively handled.

- The proposed items designed for telephone administration worked about as well as was seen for the mail versions. We see no reason to believe that substantial mode differences might exist with your proposed revisions.

Westat's recommendations for the ACS Housing questions of interest in this study, for both the mail and telephone modes, are shown in Appendix C.

Appendix A

Recruiting Screener

ACS Housing Cognitive Interviews
– Participant Screener –

Name:_____ Phone:_____ ID#:_____

A few (days/weeks) ago, you called us in response to an advertisement for research volunteers. We are looking for people willing to meet with us (here at Westat or at a conference room at.....) for a study being conducted for the U.S. Census Bureau. It will take an hour or less, and we're paying people $40 for participating. We're scheduling interviews for Tuesday, Feb. 15th through Friday, Mar. 11th.

In order to find out if you are eligible to participate in this study, I need to ask you a few questions.

1a. First, have you ever worked for Westat? (since 2000?)

YES :___: [IF SINCE 2000, TERMINATE]
NO :___:

1b. Have you participated in another Westat study since January of last year?

YES :___: [TERMINATE]
NO :___:

2. What is your age?

:_____: [IF UNDER 18, TERMINATE]

3. RECORD GENDER. IF NOT OBVIOUS, ASK: Are you male or female?

MALE :___:
FEMALE :___:

4. What is the highest level of education you have completed?

LESS THAN HIGH SCHOOL :___:
HIGH SCHOOL/GED :___:
SOME COLLEGE/VOC. ED :___:
COLLEGE DEGREE :___:
GRADUATE SCHOOL :___:

5. What is your race or ethnic background?

WHITE	:___:
BLACK/AFRICAN AMER.	:___:
HISPANIC/LATINO	:___:
ASIAN	:___:
SOMETHING ELSE	:___:

6. Is your home owned or rented by those who live there? [PAYING A MORTGAGE COUNTS AS OWNED]

OWNED	:__:
RENTED	:__:

IF OWNED, ASK Q7.
IF RENTED, SKIP TO Q9

7. **[IF OWNED]** Is the home owned in your name (or both your name and another person's)?

YES	:___:
NO	:___: [SEE IF AN OWNER IS INTERESTED; IF NOT, TERMINATE]

8. Is there currently a home equity loan on this property?

YES	:___:
NO	:___:

9. Which of the following would you say describes your home?

Mobile home	:__:	
Modular/panelized home	:__:	
Single family home	:__:	[TOWNHOUSE COUNTS AS SFH]
Multi-room apartment/condo	:__:	[CO-OPS COUNT AS CONDOS]
Single-room efficiency	:__:	
Or something else?	:__: (SPECIFY)_____	

**IF OWNER OF SINGLE FAMILY HOME OR CONDO/CO-OP, ASK Q10.
ELSE, SKIP TO Q12**

10. Compared to other (single family homes/condos) of all types in the Washington area, would you say the market value of your home is:

Far above average	:___:
Somewhat above average	:___:
About average	:___:
Somewhat below average, or	:___:
Far below average?	:___:

**IF OWNER OF SINGLE FAMILY HOME, ASK Q11.
ELSE, SKIP TO Q12**

11. Was your home built before the year 2000?

YES	:___:
NO	:___:

12. In the past year, has anyone living there received government assistance in paying for food?

YES	:___:
NO	:___:

13. Do you speak any languages other than English? (IF SO, ASK: Is English your first or second language?

YES, ENGLISH IS FIRST	:___:
YES, ENGLISH IS SECOND	:___:
NO	:___:

INTERVIEWER: CLASSIFY RESPONDENT INTO ONE OF THE FOLLOWING CATEGORIES AND DETERMINE IF WE NEED THIS PERSON

Housing Type	Owners	Renters
1. Mobile homes		
2. Modular/panelized homes		
3. Single family homes		
4. Multi-room apartments and condos		
5. Single-room efficiency		

***DETERMINE WHETHER RESPONDENT IS NEEDED IN THIS STUDY.....**

IF TERMINATED, TELL THEM WE MAY BE ABLE TO USE THEM IN ANOTHER STUDY WE ARE CONDUCTING FOR THE CENSUS BUEAU.

APPOINTMENT

Thank you for answering my questions. I'd like to schedule an appointment for an interview at a time that's convenient for you. Let me read you some times I have available and you can choose the time that is best for you:

[SCHEDULE DAY AND TIME]

May I please have your name, address and phone number? (We need your address so that we can send you directions on how to get [here/to the hotel and find the room.)

Name: _____

Address: _____ **ONLY ONE PER HOUSEHOLD**

_____

Phone number: _____

I will send the directions out to you shortly. It will include instructions on where to park. If you have to cancel your interview, please call back so that we can schedule someone in your place, OK?

Appendix B

Cognitive Interview Guide

(mail version 1)

ACS Cognitive Interviews: Housing
Self-administered (Mail)

Thank you for agreeing to help us out. Let me tell you what this is about.

I work for Westat (in Rockville, MD), which is a research company that conducts research on many different topics, under contract for many different organizations. This particular project is for the U.S. Census Bureau. One of the things the Census Bureau does is count the number of people in the country's population, as well determine the counts of people in various age groups, how many people are in different types of housing, and so on. They do this in a variety of ways - mainly by mailing a questionnaire to households, where someone is asked to fill it out and send it back to the Census Bureau

Today we are helping the Census Bureau improve the questions that are in one of the surveys they use for this purpose, called the American Community Survey (It's something they have recently started doing on an annual basis to update the information collected in the census done at the start of the decade). For the information gathered in the survey to be useful, it's important that the questions are ones that people can easily understand, and provide meaningful answers for. By reading or hearing the questions and sharing your reactions with us, it will help the Census Bureau make sure their questions are good ones. That's what we've asked you to help us out with.

Before we get into it, I should make you aware of a few things. First, I want to assure you that everything we cover in the interview will be kept confidential - Only people actually working on the project will have access to the information you share with us. But if it's OK with you, we would like to audio-tape our conversation, just so that we can review it later – it helps us analyze our results. (And finally, some of our friends from the Census Bureau that we're working with are here today – behind the mirror - to observe and see for themselves how the questions work.)

CONSENT FORM*: Here is a form I must ask you to look over and sign – it basically covers the points I've just gone over with you and indicates you have agreed to take part.* (ONE COPY FOR RESPONDENT, ONE COPY FOR US)

So the way this will work is: I'm going to ask you to fill out a test copy of the Census Bureau survey I was telling you about. You can sort of pretend you got this in the mail and you've sat down at home to fill it out. As much as possible, just to read and respond to it the way you normally would. Also, because we're testing the questions, I'd appreciate it if you could read aloud as you go along – that will help me keep track of where you are and what exactly you're reading.

Also, because we're testing the questions, I'd appreciate it if you could try and "think aloud" while you answer the questions – as much as possible, just verbalize whatever comes to mind while you think about the question and come up with your answer. I'm going to give you an example of what I mean by this, and then let you try it. Suppose one of the questions is: "How many windows are in your house or apartment?" In coming up with their answer, someone may think aloud by going:

"Well, there are 2 windows in the living room, one in the kitchen, one in the bathroom, and we have three bedrooms with one window in each. So that's a total of 7 windows – Oh, but then our basement has two very tiny windows – am I supposed to count those? If I counted those, it would a total of 9 windows."

Why don't you try it now: How many windows are in your house or apartment?

And if you're not sure what a question is asking, by all means let us know that. Occasionally, after you've answered a question, I might ask you to tell me a little bit about why you answered the way you did, or to tell me what something means to you. Okay?

Probes for ACS Housing Questions Proposals (Mail) **Version 1**

1. **Which best describes this building?**
Include all apartments, flats, etc., even if vacant.

o A mobile or manufactured home
o A one-family house detached from any other house
o A one-family house attached to one or more houses
o A building with 2 apartments
o A building with 3 or 4 apartments
o A building with 5 to 9 apartments
o A building with 10 to 19 apartments
o A building with 20 to 49 apartments
o A building with 50 or more apartments
o Boat, van, etc.

PROBES:

Why would you place your home in that category – what is it about your home that makes it appropriate for that category?

What does the phrase " mobile or manufactured home" mean to you?
IF ANSWERS "MOBILE OR MANUFACTURED HOME" Probe to find out if home fits what is intended for the category (that is, mobile homes, and not modular/panelized housing)

2. **About when was this building first built?**

o 2000 or later→*Specify Year*
☐☐☐☐
o 1990 to 1999
o 1980 to 1989
o 1970 to 1979
o 1960 to 1969
o 1950 to 1959
o 1940 to 1949
o 1939 or earlier

PROBES:
How did you arrive at that answer?
In your own words, what is this question asking?
How certain are you of the year this building was first built?

SHOW VERSION 2: *Let's look at another version of the question. How would you have answered this other version? Is it any easier or more difficult than the one you filled out, or does it not matter?*

7a. How many rooms are in this house, apartment, or mobile home? *Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms. Do INCLUDE bedrooms.*

☐☐

7b. How many of these rooms are bedrooms? *Count as bedrooms those rooms you would list if this house, apartment, or mobile home were for sale or rent. If this is an efficiency/one-room apartment, print '0'.*

☐☐

PROBES

- *What rooms did you count when you said there were ___ rooms? Are each of these separated from other rooms by floor to ceiling walls, or no? (If mentions basement/attic/storage space, ask if it's finished/unfinished)*

- *How do you count "bedrooms" for this question (The rooms in your home that you'd count as bedrooms – what makes them "bedrooms?" Is it possible someone else could look at your home and say there's a different number of bedrooms? How?) INTERVIEWER: If respondent reports number of bedrooms greater than or equal to the total number of rooms, probe to figure out basis for discrepancy*

SHOW VERSION 2 (Qs 7-8): *Let's look at another version of the question. How would you have answered this other version? Is it any easier or more difficult than the one you filled out, or does it not matter?*

8. Does this house, apartment, or mobile home have:

	Yes	No
a. hot and cold piped water?	o	o
b. a flush toilet?	o	o
c. a bathtub or shower?	o	o
d. a sink with piped water?	o	o
e. a stove or range?	o	o
f. a refrigerator?	o	o
g. telephone service from which you can both make and receive calls? *Include cell phones.*	o	o

PROBES

- *What do you think is meant by "sink with piped water?" How is that different from "hot and cold piper water?"*

- IF YES TO G: *When you say this [place] has telephone service, what you include in that?* (IF LANDLINE: *Do you also have a cell phone? Is that relevant for this question? Some people have only cell phones – how do you think you'd answer if you had only a cell phone? Why is that*?)
- [Try to understand how people relate a cell phone to a housing unit, rather than a person.

- IF NO TO G: *Probe as to whether they truly have no phone service at all, inc. a cell phone.*

9. How many automobiles, vans, SUVs, and trucks of one-ton capacity or less are kept at home for use by members of this household? *Do not include motorcycles or other recreational vehicles.*

☐☐

PROBES:

- *What types of vehicles did you include here?*
- *Are there any vehicles kept by (you/household members) that you did not count here? (What are they?)*
- If truck: ask how interpreted "*trucks of 1 ton capacity or less*." [they're not supposed to include large commercial trucks]

10. Which FUEL is used MOST for heating this house, apartment, or mobile home? *Mark [X] one box.*

- o Gas: from underground pipes serving the neighborhood
- o Gas: bottled, tank, or LP
- o Electricity
- o Fuel oil, kerosene, etc.
- o Coal or coke
- o Wood
- o Solar energy
- o Other fuel
- o No fuel used

PROBES:
- *How many sources of heat do you use in your home?*
- *If more than one, find out how they selected the one they did.*

12. IN THE PAST 12 MONTHS, did anyone in this household receive Food Stamps or a Food Stamp benefit card?

- o Yes
- o No

PROBES:
What does the phrase "Food Stamps or a Food Stamp benefit card" mean to you?

FOR HOUSEHOLDS RECRUITED FOR HAVING RECEIVED GOVERNMENT FOOD ASSISTANCE IN LAST YEAR:

IF ANSWERED NO: *What kinds of assistance paying for food did you obtain? What is it called? How does it work – that is, how do you use it to help pay for food? (Is this the same as Food Stamps? Why not?)*

16. How much do you think this house and lot, apartment, or mobile home and lot would sell for if it were for sale?

- o Less than $30,000
- o $30,000 to $39,999
- o $40,000 to $49,999
- o $50,000 to $59,999
- o $60,000 to $69,999
- o $70,000 to $79,999
- o $80,000 to $89,999
- o $90,000 to $99,999
- o $100,000 to $124,999
- o $125,000 to $149,999
- o $150,000 to $174,999
- o $175,000 to $199,999
- o $200,000 to $249,999
- o $250,000 to $299,999
- o $300,000 to $399,999
- o $400,000 to $499,999
- o $500,000 to $749,999
- o $750,000 to $999,999
- o $1,000,000 or more

PROBES:

- *In your own words, what do you take this question to be asking?*
- *How did you come up with your answer of $_____? Do you feel like you have enough information to be able to estimate this?*

SHOW VERSION 2 (Q17): *Let's look at another version of the question. How would you have answered this other version? Is it any easier or more difficult than the one you filled out, or does it not matter?*

19a. Do you or any members of this household have a mortgage, deed of trust, contract to purchase, mobile home installment loan, or similar debt on THIS property? *Mark [X] all that apply.*

o Yes, mortgage, deed of trust, contract to purchase or similar debt
o Yes, mobile home installment loan
o No-*Skip to 23a*

19b. How much is the regular monthly mortgage payment on THIS property? *Include payment only on FIRST mortgage, contract to purchase, or mobile home installment loan.*

Monthly amount-*Dollars*
$_____.00
OR
o No regular payment required-*Skip to 26a*

19c. Does the regular monthly mortgage payment include payments for real estate taxes on THIS property?

o Yes, taxes included in mortgage payment
o No, taxes paid separately or taxes not required

19d. Does the regular monthly mortgage payment include payments for real estate taxes on THIS property?

o Yes, taxes included in mortgage payment
o No, taxes paid separately or taxes not required

PROBES (PROBE AFTER Q19D):

- *What type of debt is this payment for? (When you said $_____, was that amount for one loan, or more than one loan?)* [they are supposed to report only one at a time here]

If home is a mobile home: Are you familiar with the term "mobile home installment loan?" [If so, what does that mean to you? How is it different from a mortgage?]

SHOW VERSION 2 (Qs 20a-b): *Let's look at another version of the question. How would you have answered this other version? Is it any easier or more difficult than the one you filled out, or does it not matter?*

PROBE AFTER Q20:

- *Is there any kind of loan or debt on this property we've not already talked about? (What kind of loan? Probe for details that might be useful in determining whether or not it should have been reported in the ACS interview.*

Appendix D

Westat Recommendations for the ACS Housing Questions Tested in this Study

--Mail Mode--

Description of building

Which best describes this building?
Include all apartments, flats, etc., even if vacant.

☐A mobile home
☐A one-family house detached from any other house
☐A one-family house attached to one or more houses
☐A building with 2 apartments
☐A building with 3 or 4 apartments
☐A building with 5 to 9 apartments
☐A building with 10 to 19 apartments
☐A building with 20 to 49 apartments
☐A building with 50 or more apartments
☐Boat, van, etc.

Age of building

About when was this building first built?

o 2000 or later→*Specify Year*
☐☐☐☐
o 1990 to 1999
o 1980 to 1989
o 1970 to 1979
o 1960 to 1969
o 1950 to 1959
o 1940 to 1949
o 1939 or earlier

Number of rooms and bedrooms

Present as components of one question:

7a. How many rooms are in this house, apartment, or mobile home? *Count only finished rooms separated by a wall. Do NOT count bathrooms, porches, balconies, foyers, halls, or half-rooms. Do INCLUDE bedrooms.*

(alternative instruction: *Rooms must be separated by archways or walls that extend out at least 6 inches*)

☐☐

7b. How many of these rooms are bedrooms? *Count as bedrooms those rooms you would list if this house, apartment, or mobile home were for sale or rent. If this is an efficiency/one-room apartment, print '0'.*

☐☐

Plumbing facilities, kitchen facilities, and telephone service

Present as series of items:

Does this house, apartment, or mobile home have:

	Yes	No
a. hot and cold running water?	o	o
b. a flush toilet?	o	o
c. a bathtub or shower?	o	o
d. a sink with a faucet?	o	o
e. a stove or range?	o	o
f. a refrigerator?	o	o
g. telephone service from which you can both make and receive calls? *Include cell phones.*	o	o

Number of vehicles

How many automobiles, vans, SUVs, and trucks of one-ton carrying capacity or less are kept at home for use by members of this household? *Do not include motorcycles or other recreational vehicles.*

☐☐

Main heating fuel

Which FUEL is used MOST for heating this house, apartment, or mobile home?
Mark [X] one box.

- o Gas: from underground pipes serving the neighborhood
- o Gas: bottled, tank, or LP
- o Electricity
- o Fuel oil, kerosene, etc.
- o Coal or coke
- o Wood
- o Solar energy
- o Other fuel
- o No fuel used

Food stamps

IN THE PAST 12 MONTHS, did anyone in this household receive Food Stamps or a Food Stamp benefit card?

- o Yes
- o No

Home value

How much do you think this house and lot, apartment, or mobile home and lot would sell for if it were for sale?

- o Less than $30,000
- o $30,000 to $39,999
- o $40,000 to $49,999
- o $50,000 to $59,999
- o $60,000 to $69,999
- o $70,000 to $79,999
- o $80,000 to $89,999
- o $90,000 to $99,999
- o $100,000 to $124,999
- o $125,000 to $149,999
- o $150,000 to $174,999
- o $175,000 to $199,999
- o $200,000 to $249,999
- o $250,000 to $299,999
- o $300,000 to $399,999
- o $400,000 to $499,999
- o $500,000 to $749,999
- o $750,000 to $999,999
- o $1,000,000 or more

First property loan

a. Do you or any members of this household have a mortgage, deed of trust, contract to purchase, mobile home installment loan, or similar debt on THIS property? *Mark [X] all that apply.*

- o Yes, mortgage, deed of trust, contract to purchase or similar debt
- o Yes, mobile home installment loan
- o No-Skip to …

b. How much is the regular monthly mortgage payment on THIS property? *Include payment only on FIRST mortgage, contract to purchase, or mobile home installment loan.*

Monthly amount-Dollars
$_____.00
OR
- o No regular payment required-Skip to …

c. Does the monthly mortgage payment on this property include:

		Yes	No
a.	Real estate taxes?	o	o
b.	Fire, hazard, or flood insurance?	o	o

--Telephone Mode--

Description of building

a. Which best describes this building? Is it a mobile, single family house, building with two ore more apartments, boat, or van?

A mobile home-(*SKIP OUT)*
A Single-family house
A Building with two or more apartments, or -(*GO TO C)*
A Boat, van, etc.-(*SKIP OUT)*

b. Is that a detached house, or is it attached to another house?

Detached-(*SKIP OUT)*
Attached-(*SKIP OUT)*

c. How many apartments are in this building?

Age of building

About when was this <house/apartment/mobile home/unit> first built?

IF NECESSARY: **Can you estimate the decade it was first built, such as 1950's, 1960's and so on?**

Number of rooms and bedrooms

Ask (a) if this home is an apartment. Else go to (b).

a. Is this an efficiency or studio apartment?

Yes-
No

b. How many rooms are in this <house/apartment/mobile home/unit>? Please count only finished rooms separated by a wall. Do not count bathrooms, porches, balconies, foyers, halls or half rooms.
(alternate instruction: **Rooms must be separated by archways or walls that extend out at least 6 inches**)

If yes to question a, skip out

c. Did you include bedrooms?

Yes
No-(*Go to item e)*

d. How many of the <number of rooms> rooms would you list as bedrooms if the <house/apartment/mobile home/unit> were for sale or rent?

SKIP OUT

e. How many rooms would you list as bedrooms if the <house/apartment/mobile/unit> were for sale or rent?

Plumbing facilities, kitchen facilities, and telephone service

a. Does this <house/apartment/mobile home/unit> have:
hot and cold running water?

b. (Does this <house/apartment/mobile home/unit> have):
a flush toilet?

c. (Does this <house/apartment/mobile home/unit> have):
a bathtub or shower?

Read the stem again.
d. Does this <house/apartment/mobile home/unit> have:
a sink with a faucet?

e. (Does this <house/apartment/mobile home/unit> have):
a stove or range?

8f. (Does this <house/apartment/mobile home/unit> have):
a refrigerator?

Read the stem again.
8g. Does this <house/apartment/mobile home/unit> have:
telephone service, including cell phones, from which you can both make and receive calls?

Number of vehicles

Not including motorcycles or other recreational vehicles, how many automobiles, vans, SUVs and trucks of one-ton carrying capacity or less are kept at home for use by members of this household?

If necessary: If a business vehicle is available for personal use, it should be included.

Main heating fuel

a. What fuel do you use MOST to heat this <house/apartment/mobile home/unit>?

Prompt with response categories if necessary.
If respondent attempts to provide more than 1, repeat the question and ask them what they think you should record.

Gas
Electricity-*Go to next question*
Fuel oil, or kerosene-*Go to next question*
Coal or coke-*Go to next question*
Wood-*Go to next question*
Solar energy-*Go to next question*
Other fuel-*Go to next question*
No fuel used-*Go to next question*

b. Is the gas used from underground pipes serving the neighborhood?
Yes-*SKIP OUT*
No

c. Is it bottled, tank, or LP gas?
Yes
No

Food stamps

IN THE PAST 12 MONTHS, did anyone in this household receive Food Stamps or a Food Stamp benefit card?

Yes
No-

Home value

How much do you think this <house and lot/apartment/mobile home and lot > would sell for if it were for sale?

First property loan

ASK ONLY IF OWNED WITH MORTGAGE OR LOAN – ELSE GO TO NEXT QUESTION.

a. Earlier I recorded that there is a mortgage or loan on this property. Is it a mortgage, deed of trust, contract to purchase, mobile home installment loan, or similar debt on THIS property?

Yes, mortgage
Yes, deed of trust
Yes, contract to purchase
Yes, mobile home installment loan
Yes, similar debt
No-*SKIP OUT*

b. What is the regular MONTHLY payment for the FIRST <mortgage/deed of trust/contract to purchase/mortgage or similar debt/(mobile home installment loan)> on THIS property?

[*note: only say "mobile home installment loan if home is a mobile home]*

Enter 0 for no regular payment required, or for reverse.

REPEAT b for each response in a.

c. Does the regular MONTHLY mortgage payment include payments for real estate taxes?

Yes
No-

d. Does the regular MONTHLY mortgage payment include payments for fire, hazard, or flood insurance?

Yes
No-

Appendix C: Tables

Table 1. Item Nonresponse Rates for Rooms/Bedrooms Questions

Strata	Control (%)	Test (%)	Difference (%)	Margin of Error (%)	Significant
Rooms					
National	4.1	4.8	0.7	± 0.9	No
High Response Area	3.9	4.6	0.6	± 1.2	No
Low Response Area	4.6	5.5	1.0	± 0.9	Yes
Bedrooms					
National	3.4	4.3	0.8	± 1.0	No
High Response Area	3.3	3.9	0.7	± 1.2	No
Low Response Area	4.0	5.3	1.3	± 0.9	Yes

Table 2. Median Rooms, Control vs. Test

Strata	Control (#)	Test (#)	Difference (#)	Margin of Error (#)	Significant
National	5.3	5.7	0.4	± 0.1	Yes
High Response Area	5.5	5.9	0.4	± 0.1	Yes
Low Response Area	4.6	5.0	0.3	± 0.1	Yes

Table 3. Median Bedrooms, Control vs. Test

Strata	Control (#)	Test (#)	Difference (#)	Margin of Error (#)	Significant
National	2.7	2.7	0.0	± 0.0	No
High Response Area	2.8	2.8	0.0	± 0.0	No
Low Response Area	2.3	2.4	0.0	± 0.0	No

Table 4. Rooms Distribution Rates, Control vs. Test –National

Rooms	Control (%)	Test (%)	Difference (%)	Margin of Error (%)	Significant
1	1.5	2.3	0.8	± 0.4	Yes
2	3.7	2.1	-1.6	± 0.6	Yes
3	9.1	7.7	-1.5	± 1.0	Yes
4	17.5	15.7	-1.8	± 1.3	Yes
5	22.3	19.0	-3.2	± 1.5	Yes
6	17.4	19.1	1.7	± 1.2	Yes
7	11.8	13.5	1.7	± 1.2	Yes
8	8.2	8.9	0.7	± 0.9	No
9 or more	8.5	11.7	3.2	± 1.0	Yes
Total	100.0	100.0			

χ^2 = 82.6 with 8 degrees of freedom, significant at the 10.0 percent level

Table 5. Rooms Distribution Rates, Control vs. Test –High Response Area

Rooms	Control (%)	Test (%)	Difference (%)	Margin of Error (%)	Significant
1	1.2	1.5	0.3	± 0.5	No
2	3.0	1.7	-1.3	± 0.7	Yes
3	7.7	6.0	-1.7	± 1.2	Yes
4	15.8	14.8	-1.1	± 1.6	No
5	22.1	18.7	-3.4	± 2.0	Yes
6	18.2	19.4	1.2	± 1.6	No
7	12.8	14.8	2.0	± 1.6	Yes
8	9.5	9.8	0.3	± 1.1	No
9 or more	9.7	13.2	3.5	± 1.3	Yes
Total	100.0	100.0			

χ^2 = 46.2 with 8 degrees of freedom, significant at the 10.0 percent level

Table 6. Rooms Distribution Rates, Control vs. Test –Low Response Area

Rooms	Control (%)	Test (%)	Difference (%)	Margin of Error (%)	Significant
1	2.7	5.0	2.3	± 0.8	Yes
2	6.4	3.5	-2.8	± 0.9	Yes
3	14.4	13.4	-1.0	± 1.3	No
4	23.7	19.0	-4.7	± 1.5	Yes
5	22.9	20.1	-2.7	± 1.5	Yes
6	14.4	18.1	3.7	± 1.5	Yes
7	8.1	8.9	0.8	± 1.0	No
8	3.7	5.7	2.1	± 0.8	Yes
9 or more	3.9	6.2	2.3	± 0.8	Yes
Total	100.0	100.0			

$\chi^2 = 134.0$ with 8 degrees of freedom, significant at the 10.0 percent level

Table 7. Bedroom Distribution Rates, Control vs. Test –National

Bedrooms	Control (%)	Test (%)	Difference (%)	Margin of Error (%)	Significant
0	1.3	2.5	1.2	± 0.5	Yes
1	11.4	10.2	-1.2	± 1.0	Yes
2	28.4	27.4	-1.0	± 1.8	No
3	39.9	40.4	0.5	± 1.7	No
4	15.0	15.2	0.2	± 1.2	No
5 or more	4.0	4.2	0.2	± 0.7	No
Total	100.0	100.0			

$\chi^2 = 21.3$ with 5 degrees of freedom, significant at the 10.0 percent level

Table 8. Bedroom Distribution Rates, Control vs. Test –High Response Area

Bedrooms	Control (%)	Test (%)	Difference (%)	Margin of Error (%)	Significant
0	1.0	1.7	0.7	± 0.5	Yes
1	9.4	8.3	-1.1	± 1.2	No
2	26.8	26.2	-0.6	± 2.2	No
3	41.9	42.5	0.6	± 2.2	No
4	16.4	16.8	0.4	± 1.5	No
5 or more	4.5	4.5	0.0	± 0.9	No
Total	100.0	100.0			

$\chi^2 = 7.6$ with 5 degrees of freedom, not significant at the 10.0 percent level

Table 9. Bedroom Distribution Rates, Control vs. Test –Low Response Area

Bedrooms	Control (%)	Test (%)	Difference (%)	Margin of Error (%)	Significant
0	2.4	5.3	2.9	± 0.8	Yes
1	18.7	16.8	-1.9	± 1.2	Yes
2	34.4	31.8	-2.5	± 1.6	Yes
3	32.6	33.3	0.7	± 1.6	No
4	9.6	9.4	-0.1	± 1.0	No
5 or more	2.3	3.2	1.0	± 0.7	Yes
Total	100.0	100.0			

$\chi^2 = 62.3$ with 5 degrees of freedom, significant at the 10.0 percent level

Table 10. Rooms - Content Followup Comparison Statistics, Control vs. Test

	Net Diff Rate					Simple Response Variance				
Rooms	Control vs. CFU (%)	Test vs. CFU (%)	Diff* |T|-|C| (%)	Marg Err (%)	Signif	Control vs. CFU (%)	Test vs. CFU (%)	Diff (%)	Marg Err (%)	Signif
1	-1.5	-0.9	-0.7	± 0.6	Yes	1.6	1.5	-0.1	± 0.3	No
2	2.9	1.5	-1.4	± 0.5	Yes	3.0	1.7	-1.4	± 0.5	Yes
3	2.8	1.4	-1.4	± 1.0	Yes	5.6	4.5	-1.2	± 0.7	Yes
4	2.4	1.5	-0.9	± 1.4	No	9.9	9.1	-0.8	± 0.9	No
5	2.3	-1.6	-0.7	± 1.8	No	13.6	13.0	-0.7	± 0.8	No
6	-3.7	-2.2	-1.5	± 1.8	No	13.9	14.1	0.3	± 0.8	No
7	-2.6	-1.7	-0.9	± 1.8	No	11.0	12.0	1.0	± 0.8	Yes
8	-1.8	-0.9	-0.9	± 1.3	No	8.0	8.3	0.3	± 0.6	No
9 or more	-0.8	2.8	2.0	± 1.1	Yes	6.0	7.8	1.8	± 0.7	Yes

*Difference of the absolute values of the test and control net difference rates

Table 11. Bedrooms - Content Followup Comparison Statistics, Control vs. Test

Bedrooms	Net Diff Rate					Simple Response Variance				
	Control vs. CFU (%)	Test vs. CFU (%)	Diff* |T|-|C| (%)	Marg Err (%)	Signif	Control vs. CFU (%)	Test vs. CFU (%)	Diff (%)	Marg Err (%)	Signif
0	-1.8	-0.7	-1.1	± 0.6	Yes	1.7	2.0	-0.2	± 0.4	Yes
1	1.7	0.9	-0.8	± 0.6	Yes	2.5	2.0	-0.5	± 0.6	No
2	0.3	0.7	0.4	± 0.8	No	4.6	4.0	-0.6	± 0.7	No
3	-0.4	-1.1	0.7	± 0.9	No	6.3	6.1	-0.2	± 0.9	No
4	0.0	-0.1	0.1	± 0.7	No	4.0	4.3	0.3	± 0.7	No
5 or more	0.1	0.3	0.1	± 0.4	No	1.3	1.9	0.6	± 0.4	Yes

*Difference of the absolute values of the test and control net difference rates

Table 12. Inconsistency Between Rooms and Bedrooms Responses, Control vs. Test (mail only)

Reported bedrooms≥ rooms	Control (%)	Tests (%)	Difference (%)	Margin of Error (%)	Significant
National	6.7	3.8	-2.8	± 0.7	Yes
High Response Area	5.7	3.4	-2.3	± 0.7	Yes
Low Response Area	12.1	6.2	-5.9	± 1.2	Yes

Table 13. Exclusion of Bedrooms in the Rooms Count (CAPI/Test only)

	Excluded Bedrooms (%)	Margin of Error* (%)
National	8.9	± 1.9
High Response Area	8.0	± 2.3
Low Response Area	11.3	± 2.0

*Does not represent the margin of error of the difference between control and test percent estimates